

Application No. 10/636,142
Response to Final Office Action

Customer No. 01933

Listing of Claims:

Claims 1 and 2 (Canceled).

3. (Currently Amended) A focus stabilizing apparatus comprising:

an objective lens arranged ~~opposite to~~ underneath an observation sample so as to face the observation sample;

5. a fixing base ~~for fixing the objective lens;~~

a sample base on which ~~for supporting~~ the observation sample is placed;

10. a focus adjusting mechanism, which continuously extends between the sample base and the fixing base and surrounds the objective lens, for varying a distance along an optical axis between the sample base and the fixing base;

a minute movement table ~~on~~ which holds the objective lens ~~is provided;~~

15. parallel springs situated between the fixing base and the minute movement table to allow the minute movement table to be moved in an optical axis direction of the objective lens;

an actuator provided between the fixing base and the minute movement table to minutely displace the minute movement table in the optical axis direction of the objective lens;

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20 a displacement sensor provided between the fixing base and
the minute movement table for detecting a displacement amount of
the objective lens; and

control means for allowing the actuator to perform an
extending/contracting operation based on a detection output of
25 the displacement sensor to control the objective lens and bring
it to a just-in-focus position relative to the observation
sample.

4. (Original) A focus stabilizing apparatus according to
claim 3, wherein the objective lens is focused on the observation
sample by the focus adjusting mechanism, and then, the control
means keeps the objective lens focused on the observation sample.

5. (Currently Amended) A focus stabilizing apparatus
comprising:

an objective lens arranged ~~opposite to~~ underneath an
observation sample so as to face the observation sample;

5 a fixing base ~~for fixing the objective lens~~;

a stage on which ~~for supporting~~ the observation sample is
placed;

~~a focus adjusting mechanism and a focusing adjusting handle,~~
~~both provided between the stage and the fixing base;~~

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10 a minute movement table ~~on~~ which holds the objective lens ~~is~~
provided;

parallel springs situated between the fixing base and the
minute movement table to allow the minute movement table to be
moved in an optical axis direction of the objective lens;

15 an actuator provided between the fixing base and the minute
movement table to minutely displace the minute movement table in
the optical axis direction of the objective lens;

a displacement sensor including a target and a detector that
detects a distance from the detector to the target, wherein one
20 of the target and the detector is provided in a vicinity of an
end of the objective lens ~~for detecting a distance between the~~
~~stage and the end of the objective lens~~ and the other of the
target and the detector is provided at the stage; and

control means for allowing the actuator to perform an
25 extending/contracting operation based on a detection output of
the displacement sensor to control the objective lens and bring
it to a just-in-focus position relative to the observation
sample.

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6. (Previously Presented) A focus stabilizing apparatus according to claim 5, wherein said control means includes:

a memory section for storing an output of the displacement sensor corresponding to a just-in-focus state between the observation sample and a focal point of the objective lens;

a comparing section for comparing an output of the displacement sensor and an output of the displacement sensor stored in the memory section; and

a control section for outputting an electrical signal for canceling a distance variation between the observation sample and the objective lens based on a result of comparison by the comparing section.